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ABSTRACT

A study examined the supply and demand for skilled workers in the following sectors throughout the member countries of the European Community: agriculture (including horticulture and forestry); food industry and trades; hotels, restaurants, and catering industry; tourism; transport; textile industry; textile clothing; leather; wood; building (structural engineering and building construction); civil engineering; iron/steel; metalworking (including mechanical engineering and motor vehicle and plant construction); electrical engineering/electronics; motor vehicle repair; chemicals; print and the media; office/administration; and trade. The study revealed that, although higher qualifications are being required in many cases, the qualifications required for employment in some occupational areas are even lower than in the past. Increasingly, skilled workers were being expected only to understand complex information and data processing systems and machines rather than to run them with the precision and speed required in the past. A trend toward polarization between simple workplaces and highly qualified job areas was discovered in commercial and office work, and qualification requirements in office occupations were rising more sharply than in industrial manufacturing. Staff units, research and development, marketing, and highly qualified service jobs were found to be on the rise. Growing environmental awareness appeared to be affecting all occupations and jobs. (Contains 10 references.) (MN)

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– Situations and trends: Supply and demand for skilled workers –

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– Situations and trends: Supply and demand for skilled workers –

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1993

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I General Developments

The comparability study carried out by CEDEFOP on the basis of the Council Decision of 1985 (368/85 ECC) and with the specialized assistance of the EC Commission covers approximately 90% of all skilled workers in what is known as the EC Level 2 category, i.e. the level of skilled blue- and white-collar workers. Nineteen occupational areas and/or sectors were selected on the basis of the priorities submitted by the Member States. In a number of these occupational areas there are so-called cross-sectional occupations which can be found in several sectors and branches of the economy. Examples of these are occupations in the commercial and administrative sectors and in branches dealing with the operation, maintenance and repair of machines and systems. The delegates involved in the comparability study generally had little trouble reaching agreement on assigning most of the occupations at skilled worker level to individual economic and industrial sectors, however.

It should be noted in passing that the occupational activities and characteristics of the defined occupational profiles will continue to overlap to a certain degree both within the individual sectors and across several sectors. This is reflected in the formulation of duties and tasks among other things, which sometimes shows repetition.

The occupational profiles were defined bearing in mind that in the Member States of the EC these skilled workers normally also undergo extended formal training within the countries' respective education and training systems. This does not mean, however, that the qualifications might not have been acquired through relevant occupational experience. The range of formally certified skilled worker qualifications which can be found in the individual labour markets of the EC Member States varies greatly from one country to the next. The proportion of young people who have received certified

training at skilled worker level at least, or at a higher level, varies according to the age group and the respective education and training systems:

In Denmark, Luxembourg and Germany only 10% to 20% of 16- to 18-year-olds leave the education and training systems without in-depth training, i.e. without having acquired formal qualifications at least at skilled worker level. Belgium, France, Ireland and the Netherlands constitute a second group; about 30% of 16- to 18-year-olds have no certified training even at this level. In Greece, Italy, Portugal, Spain and the United Kingdom about 50% of young people start their working life without having received any technical/specialized i.e. vocational training.

In the latter group of countries and in general, there is a definite trend towards young people staying on longer in full-time school education. This does not necessarily mean that more young people are acquiring vocational/specialized qualifications, however. While the situation results in those entering the labour market having a higher level of general education, it does not automatically lead to an increase in the number of school-leavers with formal vocational training qualifications at this level.

In recent times all countries are tending to offer follow-up qualifications and certificates and trying to extend the range of relevant in-company and extra-plant continuing and further training courses in order to increase the geographical and occupational mobility of skilled workers. This is being done not least through the help of systematic promotion through the EC structural funds (Social Fund, Regional Fund and Agricultural Structural Fund). The development and extension of the vocational training systems in Greece, Portugal and Ireland and in parts of Spain, Italy, the United Kingdom and more recently also in the Federal Republic of Germany in the area of the former GDR have received a good deal of assistance

from these funds.

It is only natural that the supply and demand of skilled workers depends on the type and size of the respective industries and services in the individual Member States. Their competitiveness both within the EC and beyond its boundaries is becoming more and more dependent on the quality of training the workforce receives. The promotion of human resources as a decisive factor in competition has become the focal issue in debates in recent years. It is not surprising then that education and training systems are competing against each other to a greater extent as well.

It is hoped that the structural changes in industry and the economy (which EC integration has also helped induce) will counteract the danger of Japan and South-East Asia on the one hand and the United States and Canada on the other becoming more competitive than Europe. These structural changes can only be implemented successfully, however, if great efforts are made in the initial and continuing training of skilled workers. Even today, despite the fact that those entering the labour market have a higher level of general education, the cleft between the supply and demand of skilled workers, which became evident in nearly all sectors in the early 1990s, is tending to become more pronounced. This stems in particular from demographic developments and the disproportionately high percentage of older people among the working population of Europe.

In past decades, the highly industrialized countries of Europe depended largely on the recruitment and settlement of foreign labour, including labour from third countries. This dependence still prevails to a great extent and will probably continue in view of the demographic development. However, the proportion of workers with certified qualifications among this sector of the workforce is particularly low. Although they often have qualifications, they are not or only rarely

officially recognized. This situation results in social and occupational integration problems, especially in view of the current structural changes.

These people as a group are severely affected or threatened by unemployment since they can rarely transfer their qualifications from one enterprise to another; generally it is not possible for them to exercise their rights of mobility within the EC and they often have only a limited knowledge of the language of the guest country, etc. The above-mentioned follow-up qualifications and certificates including further and continuing training need to be made more accessible to this group of people, not only for their own sake but also in the interest of enterprises and their competitiveness. They can only improve their options substantially - with regard to their becoming integrated in the guest country or possibly returning to their country of origin - if they have formal qualifications.

In view of higher job requirements, a general trend seems to be developing in the EC: the acquisition of so-called Level 2 qualifications is becoming a sort of minimum standard which companies and administrations are specifying as the minimum entry requirements for stable employment. It is becoming increasingly difficult for unqualified workers or for people who have become "de-skilled" in the course of their working life to find and keep a stable job. The development of work organization in industry and the service sector, which is characterized by automation and work intensification, a reduction in repetitive work and simple service activities, by customer-oriented and diversified production, requires a higher degree of autonomy from the respective skilled workers in carrying out their relevant tasks. They are responsible for complex and capital-intensive manufacturing processes which combine individual stages of production and processes that were previously characterized by division of labour. Checking, maintaining and repairing machines are frequently

part of the machine operator's work these days in order to minimize breakdowns and repair time, for example. Clerical workers, such as banking and insurance clerks, are likewise carrying out a combination of tasks that were previously divided into those with contact with the customer and those without (disappearance of the division into front office and back office).

At this stage it is difficult to say whether we can conclude from these trends that the tasks that make up the jobs of skilled workers, which were largely regarded as established fact or assumed to exist for the purposes of the comparability study, will become increasingly obsolete. The experts are still arguing the point! In any case we can see even at this level that more and more tasks are being combined and turned into more comprehensive occupational profiles and that occupational requirements are being raised. The relevant occupational competence and ability to take action can, therefore, no longer be acquired exclusively through on-the-job training or occupational experience. This would justify extending available training courses to enable all young people if possible to obtain vocational qualifications at least at this level as well as organizing and extending continuing training measures to enable older members of the workforce to gain access to recognized training qualifications and to keep abreast of the afore-mentioned changes. The EC and all its Member States have subscribed to this aim. Efforts are being made to achieve this goal through special training and continuing training measures and programmes (see also the PETRA and FORCE programmes and Community initiatives such as EUROFORM and NOW as well as the intervention of the EC structural funds in disadvantaged regions of the EC).

The way in which training should be organized depends on the practices, financial possibilities and institutional requirements in the individual Member States. The forms of training and educational paths can and will continue to be

extremely different.

The goals of training and the profiles of the occupations that trainees hope to qualify for are tending to become more and more similar. This goes hand in hand with the growing economic and social integration of Europe as well as the innovations in production and services brought about through the comprehensive introduction of new information and communication technologies.

The term "EC occupational profiles" used in this compendium and in the comparability study does not mean that diverging, differently tailored or defined profiles will not continue to exist in the individual countries. The jointly-agreed upon sector-specific descriptions of occupations, characteristic tasks and duties are simply reference profiles for the purpose of comparing and assigning the training profiles of individual countries with their corresponding, specific, often original, national occupational titles. They are not always identical; often several training profiles can be assigned to the EC occupational profile provided they cover at least the EC profile. The individual Member States are responsible for assigning their training profiles. The Commission of the European Communities and CEDEFOP have simply checked the practical accuracy but not the contents of training or the examination requirements.

The comparative tables allow conclusions to be made about the degree of differentiation of training across all Member States, which in turn gives them an instrument to help them to draw their own conclusions about how to reform their vocational training system if necessary.

This comparison might then result in a harmonization or convergence in the structure of training occupations on offer, especially if a number of Member States are already in the process of reforming or extending these structures for

national reasons.

It is completely at the discretion of the individual Member States whether and how far they choose to treat these EC occupational profiles as minimum standards or basic requirements and/or see them as binding training objectives. Neither the Commission of the European Communities nor CEDEFOP as its specialist agency consider these occupational profiles to be minimum standards in their present form. Before this could be the case, they would have to be more detailed, they would have to be supplemented to take in future requirements and they would have to be discussed once more, this time at the political level and/or within the framework of the social dialogue at Community level.

If politically desirable, these profiles could, however, represent the first step in what would clearly be a lengthy and laborious process. At present, the occupational profiles serve more as a common denominator to facilitate the comparison of certified training or of qualifications attained through occupational experience. It should be stressed, however, that this is neither the smallest nor the largest common denominator. Each of the 12 Members States involved and the experts they nominated had to make compromises and abstract from their own specific situation. In the light of this, the results really deserve to be called EC profiles!

As mentioned above, about 90% of all skilled workers at this level should be represented by the comparability study, which has looked at 19 sectors and 209 occupations. Certain important sectors are missing, however, such as the health service, the social and cultural sector and a few essentially artistic craft trade occupations, such as musical instrument makers and many more. Either few people pursue the occupations in these fields or the respective prevailing requirement profiles are generally at a higher level than the ones dealt with to date.

II Sector-specific Developments

The 19 sectors included in the comparability study differ significantly in importance from one Member State to another. The industrial and economic development of the individual countries has shaped their particular educational and vocational training structures, the scope and degree of formalization of training courses, etc. in characteristic ways. Nonetheless, a number of parallel developments can be identified and they become all the more noticeable, the deeper one delves into the material at the level of the individual sector or occupation. One sometimes has the impression that the differences are less significant at sectoral level than at the level of the organizational structures of education and training in general.

Occupational areas in the male-dominated manufacturing industry, such as in mechanical engineering, iron and steel production, the building industry, electrical engineering and motor vehicle industry, are usually characterized by a comparatively high degree of professionalization and formalization. Consequently, training qualifications play a very important role. By contrast, industrial sectors employing a high proportion of women are characterized by comparatively low importance being attached to formal training qualifications. Among these sectors we find in particular the food, textile, hotel and catering, and tourist trades, and to a lesser extent, the trade and administration sectors.

This distinction is beginning to disappear, however. Entry requirements seem to be becoming increasingly similar although certain specialized and occupationally specific characteristics are likely to remain.

Two basic trends characterize the requirement profiles for skilled workers - including those at Level 2 - of all sectors and occupational groups:

a) Trends relating to technological and organizational innovations;
b) Trends relating to growing and ever more rapidly changing customer demands.

In this process, **technological and organizational innovations** relate in particular to the increasing penetration of companies by computerized planning, process, control and workplace systems, with networking initially taking place within an enterprise but often extending to other enterprises too. This has resulted in a stronger interconnection of functional areas that were previously more isolated on the whole. These innovations have affected qualification demands in three basic ways:

- Employees must learn to work much more closely and directly with other occupational groups. Interdisciplinary cooperation is the order of the day!

- Traditional functional areas are being done away with or they are being reorganized: Functions are being integrated and hierarchies flattened, areas of responsibility are being reorganized by moving them "downwards"!

- Virtually all employees in all sectors are expected to have a mastery of electronic data processing and related systems.

Growing customer demands can be seen in two respects in particular:

- Rising demands for quality and a greater variety of product types, which means that enterprises have to be more flexible in organizing and resetting production processes;

- Customers are becoming increasingly ecologically aware and are placing greater store by production methods that save both resources and energy and protect the environment and they are favouring products manufactured in this way.

These developments, too, affect qualification requirements:

Cost-effective solutions to **customers' demands for quality** can only be found if the quality of work performance improves at every workplace - from quality control to integrated quality assurance!

The **desired product variety** can only be attained with employees who are able to act flexibly and appropriately in the situation and are capable of taking decisions. Core skills are needed!

The increasing **ecological demands of customers** require qualifications that enable resource-saving and recycling-orientated development, production, marketing and disposal and/or re-use of products.

The basic trends show that, amongst other things, sector-specific peculiarities in qualification profiles are becoming more and more eclipsed by cross-sectoral job and occupational profiles, as could be seen, for example, in commercial, administrative and maintenance occupations. This is also evident in the traditional, more sector-specific production occupations: In the Netherlands, for example, the occupation of skilled worker for processing technology has been introduced. Trainees for this occupation learn how to control and regulate automated processes, irrespective of whether they occur in the chemical, food, steel or textile industry.

At the same time, basic information and communication technology including electronic data processing is being

taught in schools in most of the Member States as part of general education; vocational training will thus be able to concentrate on teaching specialist applications in the future.

1. Agriculture Including Horticulture and Forestry

The supply and demand for skilled workers in this sector vary greatly in the Member States, depending on whether there is primarily a small and medium-sized enterprise structure or whether large-scale enterprises predominate. This in turn depends on the different climatic and geographic conditions in the respective countries. As a result of the European Community's agricultural policy, the chances of survival for polyvalent smallholdings with a wide range of products have tended to become worse. Family-owned smallholdings have either had to specialize or become enterprises supplementing the family's income, the main breadwinner working in another sector, for instance in industry, the craft trades or tourism. This has led to a general decline in the demand for skilled workers in dependent employment in this sector.

If people have obtained skilled worker qualifications, they tend to become self-employed. In forestry, horticulture and the fishing industry, largely organized around large-scale enterprises, a greater proportion of skilled workers of this level can still be found.

With mass production methods, skilled workers actually employed in agriculture and horticulture have continued to become more and more specialized in relation to the production of certain animals and plants. On the other hand, training courses have generally become less specialized and more scientifically orientated as a result of higher occupational requirements. In agriculture too, it is becoming increasingly difficult simply to pass on knowledge and skills from one generation to another or impart them through practical

experience. Here, too, formal vocational training courses are tending to gain in importance even though on-the-job training is still the predominant form of training the younger generation in a number of the particularly disadvantaged regions of the EC.

Seasonal and casual work still plays a major role in this sector, especially in the Mediterranean region, in wine-growing, horticulture and forestry, for instance. In the Netherlands, Denmark, the United Kingdom as well as large parts of the Federal Republic of Germany, by comparison, the proportion of casual workers - family members excluded - is negligible, due to the high degree of mechanization and automation.

Machine operation and the application of information technology has grown to an extent that is comparable to the manufacturing industry. Individual workplaces have become very capital-intensive. The commercial side has been strengthened by the inclusion of certain aspects of sales promotion and marketing.

Environmentally-friendly attitudes and activities which protect the environment have also gained in importance over the last few years. Landscape conservation and ecological production methods avoiding, wherever possible, the use of chemical and pharmaceutical additives for protecting plants and preventing disease are becoming more and more important, with consumers becoming more demanding and developing more health awareness.

All this puts new demands on the qualifications of skilled workers, who see themselves faced with the task of rediscovering old, tried and tested techniques and procedures, some of which had been all but lost in the widespread industrialization of plant and animal products, and using them in conjunction with the afore-mentioned modern technological

opportunities.

The jointly-defined occupational profiles reflect the different situation in each of the Member States: the profiles not only describe particular plant and animal species but also polyvalent profiles which cover the spectrum of animal or plant species. The latter type of profile is found increasingly rarely in practice; more and more often training is tending to cover the entire spectrum taking in certain specialized and/or product-specific emphases as necessary.

This trend seems to be accompanying rising demands for flexibility and adaptability in the product mix a company supplies.

2. Food Industry and Trades

This sector represents approximately 8% of the total output of the processing industry. In 1989, just over 2 million people were employed in this sector throughout the European Community. This sector of the economy shows itself to be highly heterogenous with respect to the range of national and regional products and the different production methods and forms of organization. It is characterized by the co-existence of a few enormous multinational concerns and a large number of small and medium-sized enterprises. Craft trade and industrial production using highly sophisticated production methods exist side by side. Although the Single European Market and the abolition of trade barriers which accompanies it may result in a new impetus being given to the concentration and interconnection of companies and to increased competition, craft-trade and small enterprises will continue to produce foodstuffs in the future, albeit less and less so. It remains to be seen whether customers' wishes for more ecologically-orientated production will improve the chances for craft-trade enterprises once more.

New products and production methods are also permeating this sector to a greater and greater extent. Computer-aided bakeries, for example, with a central production site and various branches, which network the data flow on purchase and sales figures and rationalize their transport routes are on the advance. Craft trade enterprises are increasingly making use of new technologies and modern fermentation processes, freezing and preserving techniques as well as electronic data processing. This results in a number of new qualification requirements for skilled workers.

Over and above a knowledge of materials and raw materials, industrial production workers need to have a general understanding of process engineering and appropriate skills in machine operating and the control and monitoring of production processes, including the ability to carry out routine maintenance and servicing. In view of the diversity of different products and production methods, there is a large number of specific occupational profiles in the EC Member States and a differentiated range of training courses and corresponding certificates.

In this sector, new production methods and technologies have been designed more for clearer product differentiation than for simply extending production volume. Only certain areas of the food industry, such as sugar, milk products, plant and animal fats and oils, processing and preserving fruit, vegetables and drinks are suited to large-scale industrial production methods. Recently, automation has played a more important role in boiled and baked food, confectionary, snacks, pastries and tinned fish. Here too, user-friendly packaging and marketing policies are central issues.

Biotechnology has an increasingly important role to play in product innovations and in linking different production stages - and this requires research and development. In this respect, large-scale enterprises have an advantage over

smaller enterprises and this may partly explain the current trend towards concentration. Large advances in productivity go hand in hand with a general reduction in staff, in particular less qualified workers.

At the same time, qualification requirements are rising in such a way that unskilled or low semi-skilled workers will have fewer and fewer opportunities for employment in this sector in the future. This is a reversal of the situation which has existed up to now, in which a majority of the occupations in the food and drinks industry required few qualifications.

There are still good employment prospects in this sector; in contrast to other sectors, it is still expanding. These prospects depend on applicants having good skilled training, however. In this sector as in agriculture, pure on-the-job training is proving inadequate in assuring stable employment in both the craft trade and industrial branches of the sector.

3. Hotels, Restaurants and Catering Industry (HORECA)

With the exception of Greece, Spain and Portugal, the number of **hotels** is decreasing throughout the European Community. The number of beds and rooms continues to rise at the same time. There are well over 3 million hotel rooms in the EC which, according to the World Tourism Federation, represents approximately 36% of the hotel rooms throughout the world. Between 1980 and 1987, the number of beds increased by 14%. Greece, Portugal and the Federal Republic of Germany showed the highest growth rates. The number fell only in Ireland. Occupancy figures of around 50% throughout the EC are relatively low, however. Spain and Greece have the highest occupancy rates at 56%. It is expected that demand will remain stable in most important hotel markets in the 1990s.

Business trips, which make up about two-thirds of the occupancy of the leading hotels and hotel chains, should continue to rise with the economic integration of Europe. The increase in the number of conferences, trade fairs and exhibitions will on the whole mean further growth for hotels; special conference hotels are growing in importance.

The change in the range of services provided by hotels has also led to changes in the qualifications needed by staff, with more emphasis being placed on commercial and organizational skills and knowledge as well as the traditional ability to look after guests.

The quality level of hotels is increasing at the same rate as smaller and older establishments are disappearing, and this is reflected in the general decline in the number of 1-star hotels.

Although a large number of simple jobs will probably continue to exist for kitchen staff and maids, requirements have also risen here as a result of higher quality standards. Staff members authorized to issue instructions at the reception desk and personnel responsible for looking after guests need appropriate skilled white-collar worker vocational training and a fundamental grasp of data processing to be able to provide the impeccable service that is generally coming to be expected.

The number of unskilled workers needed varies according to the time of year and the tourist season, which accounts for why there is also a large number of seasonal jobs. Access to permanent employment in this area, too, is possible only through good specialized training, especially since the number of family-run and simple hotels seems to be falling.

At the same time, holiday homes and self-catering apartments are gaining in importance, which is also likely to reduce the

number of simple family-run pensions. Larger hotels and holiday resorts insist that their staff have foreign language skills, another reason why higher and higher general school leaving certificates are being expected of employees in the hotel trade.

Although the **restaurant and catering trade** displays similar trends to the hotel trade, it has also witnessed a number of special additional developments. The growth of the tourist industry and the increasing tendency to eat out has led to a corresponding expansion in the number of restaurants and cafés. Due to the different way of life in the individual Member States, different initial situations and growth rates can be noted. Thus Spain, France and Italy - where eating out is typical - continue to become more and more attractive as tourist countries.

Approximately 5% of total consumer spending in the European Community goes to the restaurant trade. There are, however, significant differences from country to country: In Spain the figure is three times higher than the average figure, in Portugal it is nearly double, while in France, the United Kingdom, Belgium and the Netherlands it is approximately 3.5%. Only 2.5% of consumer spending in the Federal Republic of Germany goes to the restaurant and catering trade. There are similar differences in demand criteria. Fast-food restaurants and pizza chains have expanded rapidly in general, the former accounting for 4.5% of the total turnover of the catering trade in the EC. Nevertheless, while the fast food sector accounts for about 8% of catering turnover in the United Kingdom, it accounts for only 1% in Italy. This points to large differences in consumer behaviour in the different countries.

The threat of reduced disposable income and a certain degree of saturation are helping to bring the boom in consumer spending to an end and with it the danger of reduced growth in

the 1990s. At the same time, changed consumer behaviour is creating new challenges for the restaurant and catering trade. There seems to be a trend towards more health-conscious behaviour and the use of ecologically friendly products and towards an international harmonization of lifestyles and eating habits. The exceptions to this trend are partly to be found in France and Germany where regional cooking is being rediscovered.

Whether or not the fast-food industry can extend its share of the European market will largely depend on the amount of disposable income and on whether the consumer behaviour of the younger generation will follow the Anglo-Saxon trend, as has tended to be the case in the last few years.

Restaurant chains, self-service and fast-food restaurants largely seek minimally-qualified workers. There is, however, a certain degree of automation in the catering industry in producing pre-prepared and oven-ready foods. This also requires skilled process workers. High-class and top-class restaurants usually employ well-trained skilled kitchen staff, waiters and waitresses. These are and will remain much sought-after because irregular working hours and shift-work lead to a comparatively high rate of migration out of the sector. Due to the internationalization of cuisine and waiting, skilled workers in this sector enjoy relatively high mobility. As part of their personal further training, skilled restaurant staff increasingly study the cuisines of other countries and/or gain part of their practical experience in countries with particularly attractive cuisine. Sometimes they then return to their home region and become self-employed.

Catering and delivery to restaurants and similar establishments from canteen kitchens have increased over the last few years, as have deliveries of ready-to-eat meals to private homes. Consequently, the mass-production of food is

continuing to increase, as is the amount of unskilled workplaces associated with it, as we have already witnessed in the USA.

In contrast to the sectors mentioned up to now, it is unlikely that the demand for staff qualifications in the hotel and catering trades in general will rise. On the contrary, the amount of temporary, part-time, seasonal and shift-work will increase. School and student workers play an important role here since no social security contributions usually have to be made for them which therefore seems to be an appealing arrangement for both parties. Full-time workers sometimes suffer as a result of this, however; their wages, salaries and job security will therefore remain less attractive than in other sectors.

Over the last few years, investment in initial and continuing vocational training has concentrated on the tourist regions of the EC in an effort to improve service, maintain their attractiveness and entice new tourist groups. However, even the regions that are only now discovering tourism as a source of income and are geographically or climatically less advantaged are investing more strongly in training for skilled workers and managers in their hotel, restaurants and catering trades. Recreation areas near densely-populated conurbations and the spread of amusement parks and leisure centres have an important role to play in this and are always associated with restaurants and catering businesses.

4. Tourism

The supply and demand for business trips and package holidays, both at home and abroad, continue to rise. At the same time, there has been an overall increase in the recent trend towards taking long-distance holidays, with North European countries showing the greatest growth in tourism. This all leads to an increased demand for the services of travel agents, tour

operators and transport companies. Their income has dropped, however, as a result of the strong competition in this growing market. At the same time, opportunities for people to book accommodation and holidays directly using modern telecommunication services have increased. This could endanger the sector in the medium-term.

Tourist offices and predominantly local or regional authorities offering tourist information services have been extended and made more effective in nearly all regions of Europe in the last few years. Here, a multitude of new and sometimes highly-qualified workplaces has developed so as to offer a broad range of cultural and tourist services as part of their overall efficient service for solvent tourist and business travellers. Germany and the United Kingdom have the highest growth rates and the greatest demand for such services.

As a result of competition from new holiday destinations and a periodic failure of package tours to meet the quality standards they guarantee, the Mediterranean forfeited some of its attractiveness in the early 1990s.

Business travel seems to be a more stable source of income, especially since people are most likely to seek cheaper holidays during a recession. Although rail and bus travel still remain alternatives to flight, the latter has seen the greatest growth. Charter companies accounted for approximately 60% of paid air miles in 1986. Charter companies' share of the market is growing steadily.

Around 60 000 enterprises operate as travel agents and tour operators in the European Community. In contrast to the other Member States, in both Germany and the United Kingdom there is a growing concentration of these services into a few chains. The advantage of this lies in the use of computer-aided booking and in participating in costly marketing. Small,

independent travel agencies, including those in countries where such chains have not taken hold, will not be spared the threat towards concentration. A great deal depends on whether the small travel agents are also given access to the large reservation systems and information services and if they can offer additional attractive services to their customers; otherwise they will fall prey to the large organizations.

This brings to light the fact that the travel and tourist industry is hardly feasible today without the widespread use of computers. Thus, new requirement profiles for employees have developed in the past with a growing trend towards ever faster information processing and communication. The customer still wants to be looked after, but also wants clear, concise and plausible information that meets his individual needs.

Cost-effectiveness (value for money) is always of primary importance, which is why it is vital to have a good overview of the rapidly-changing market. A high degree of flexibility and intelligence are crucial in addition to specialized qualifications in correspondence, telecommunications and bookkeeping. Qualification requirements are tending to rise with the growing demands of both customers and organizers.

Travel organizers are increasingly being called on to act as marketing managers with regard to what is known as incentive travel, in order to offer products and services to affluent customers. Commercial aspects are taking on a more important role in the travel industry in a similar manner to the hotel industry. Conference, trade fair and congress centres are a promising field in the future for skilled tourist industry personnel and they are developing ever closer links with the hotel industry. These centres require advertising, however, and they have to be efficiently utilized.

Although this is a growth industry, competition is high. For this reason, enterprises cannot forego good training for their

skilled personnel. Training for skilled workers which concentrates on carrying out front desk activities is becoming less and less adequate. Conceptional, planning and organizational skills are generally required. Applicants are therefore increasingly required to have completed training at a higher level to gain access to these occupations. This goes hand in hand with the requirements that an applicant has language skills and a knowledge of the cultural, geographical and archaeological peculiarities of the region.

Entertaining and looking after people in their leisure time has taken on an ever greater importance in tourism as well as amusement parks and leisure centres over the last few years. The dividing line between looking after high-performance athletes and looking after youth or cultural trip tourists has become blurred.

In several countries, the occupation of animateur has been professionalized, in other words, there are more and more formal training courses being offered by private and state-run training providers. Here, too, there are the afore-mentioned specializations. There are, however, large differences within the EC with regard to access to this occupation which is often pursued only part-time and not on a permanent basis. Whether and how far it will succeed in becoming an occupation in its own right will depend on leisure time behaviour, the disposable income available for this purpose and the development of package holidays.

Youth and cultural trips and school and student travel make an important contribution towards international understanding, especially in the light of the growing integration of Europe. This helps to explain why investment in initial and continuing training for the relevant skilled workers should bring good returns. However, this field relies heavily on the willingness of public authorities to provide funds, which does not seem likely in the present period of recession.

In the tourism sector, too, there is a rising demand for tour operators to act in a more socially acceptable and environmentally-friendly manner and offer services that correspond with these ideas. For holiday travel to the Third World and to distant lands in particular, where tourism has boomed and is one of the main sources of income, great importance is being attached to preventing this tourism from destroying the environment and indigenous cultural traditions. This requires skilled workers to exercise a high degree of sensitivity and empathy. Appropriate education should prepare them for this.

5. Transport

The transport sector is responsible for conveying people and goods. The most important means of transport are railways, heavy goods vehicles, local public transport (underground, suburban railway, tram and bus services), inland barges, sea and coastal vessels and aeroplanes. This sector has grown in importance with the increased exchange of goods and passenger transportation and especially through European integration. The relative importance of the respective means of transport has changed significantly in the last three decades. The most important of these changes has been the shift away from rail and waterways in favour of roads. Truck drivers are often required to undertake tasks that are not directly related to their vehicle or to transport. They are sometimes given organizational tasks relating to purchasing or selling transport services.

Rail transport has forfeited the most. This is partly due to the trend away from mass transportation and towards special freight. Railways and inland waterways continue to be competitive for transporting bulk goods.

European Community citizens spend an average of 15% of their net income on mobility, although the greater part of this is spent on their private cars. The sharp rise that can be seen in passenger transportation is due to demographic growth, increased income coupled with more leisure time, and in the merging of European product and service markets. The growing use of modern technology and communication systems is bringing about an ever-closer interlinking of the various means of transport. Although competition is increasing between the different modes of transport, closer cooperation can also be seen, for instance in the combination of rail/road, cargo and passenger transportation. The increased use of containers and rail trailer shipment is the result of greater scepticism about a further expansion of road traffic.

In recent years, local public transport has been promoted more strongly again in an effort to relieve the inner cities somewhat of the unbearable strain of harmful emissions, noise and accidents caused by road traffic. Increased environmental awareness should contribute to a redistribution of transport services amongst the various forms of transport. The wider use of high speed tracks and trains will provide increased competition for air traffic. The congestion on the roads in inner cities and conurbations is leading to a certain renaissance of environmentally-friendly and energy-saving tram and trolley bus systems.

Hugh investment and the expansion of transport services has occurred and is occurring without any increase in the number of employees, however. The railways are cutting their workforce considerably. At the same time, international and EC-wide cooperation and the development of a joint railway system will result in new qualification requirements and a certain increase in the number of highly-qualified personnel.

Railways will no doubt regain their importance in the future since they are one of the safest forms of transport and they

help people reach inner cities and conurbations without either congestion or stress. Since they use electricity they are also a comparatively environmentally-friendly form of transport. However, if they want to catch up again with other forms of transport, they will need to improve their services to meet the higher demands of customers. This once again points to the importance of improving the initial and continuing training of their staff, whom the enterprises usually train themselves. Incidentally, this also applies to the staff of local public transport providers.

Inland waterway and coastal shipping and their significance depend on the waterways available. The former is concentrated on the Rhine, which represents the backbone of the European network of waterways. Other rivers such as the Meuse, the Scheldt and the Elbe are connected to the Rhine by canals. New opportunities may arise for inland water transportation through the opening of the Rhine-Main-Danube Canal. Following a sharp decline in importance throughout the 1970s and 1980s, a small upward trend has been observed in the early 1990s.

Small private ship owners - mostly owning one ship only and living aboard with their families - dominate inland waterway transport. Large shipping companies with twenty or more ships can be found along the Rhine and its tributaries. Private ship owners have often set themselves up in cooperatives to acquire larger contracts and to be able to compete with large shipping companies for the larger contracts.

The shipment of cargo in coastal waters and by sea has been expanding again in recent years. A rise in freight costs and volume can be noted - and EC fleets are among those who have been benefiting. More and more EC fleets sail under so-called flags of convenience so as to avoid paying taxes and to keep crew costs down. They frequently sail under Panamanian, Liberian or Cypriot flags. At present the EC is developing an efficient EC shipping system and introducing its own "EUROS

register" so that EC freight shipping will become more strongly represented in international shipping again.

If world economies take more of an upturn in the next few years, container transport in particular is expected to witness stronger growth. A main feature of container transport is the increased concentration and integration of freight companies offering complete freight services from the manufacturer through to the final customer.

Employment numbers in this sector are falling steadily by about 4% per annum. Because of the relatively high fluctuation of qualified skilled workers, however, these still have good to very good prospects.

Regional and tourist public bus transportation has declined to a similar extent as public rail transportation. This trend seems likely to continue. Road freight haulage is still increasing, however. With the exception of a few large-scale enterprises in the north-west of the EC, small and medium-sized enterprises predominate in this sector. The Netherlands and Belgium have a strong position in the competition. Competition will probably become even greater with the harmonization of regulations and taxation, and even more so since central and eastern European enterprises now have access to the European freight market. The opening of the Channel Tunnel in 1994 will help British enterprises gain access to the continental market.

As a result of the stronger competition, initial and continuing vocational training for employees is sometimes overlooked. Lorry drivers are often not trained well enough to transport dangerous goods, drive with enough confidence and to control their vehicle in dangerous situations. This sector urgently needs jointly-agreed extra conditions for acquiring special driving licences and public transportation licences in order to prevent accidents, the number of which has risen

sharply in recent years, and to allow the free play of market forces among the EC Member States and beyond them. The incorporation of 'just in time' production methods and better utilization of personnel, e.g. by not having them drive without a load, will probably result in an upgrading of the qualification requirements for drivers in conjunction with logistic and organizational tasks.

The qualification requirements for skilled dock-workers employed in Europe's sea and inland ports have changed dramatically in the last few years. Some ports have developed special profiles. Traditional dock workers have virtually disappeared. Modern lifting, suction and transport machinery needs to be operated, serviced and inspected. The various types of freight must be moved safely and without being damaged from one form of transport to another and to warehouses. Each individual skilled worker has a high degree of responsibility for special freight that is becoming more and more valuable. As individual responsibility has increased, so port-specific initial and further vocational training has been developed for each and every workplace in nearly all of the larger ports. A large number of semi-skilled workers, for whom a shorter training period suffices, is still employed to load and unload bulk freight and containers. All other skilled transport workers are increasingly being required to have undergone a comprehensive skilled worker training in order to enter the field.

6. Textile Industry

Despite rising competition from low-wage countries in South-East Asia and Latin America, the textile industry remains an important industrial sector in the EC, employing nearly 2% of the total workforce. It is particularly important in south European countries. The textile industry is divided into areas according to the initial material, be it wool, cotton,

linen, hemp or jute.

Knitwear, especially socks and hosiery, as well as carpets and other floor coverings are also produced on a large scale.

The introduction of chemical fibres into the textile industry has meant that the distinction between this sector and those processing synthetic materials and chemical products has become somewhat blurred. The dividing line between the textile and clothing industries is similarly vague as is that between the leather and shoe industries to a certain extent.

This sector was fundamentally restructured in the 1980s. New technology and labour-saving investment helped to raise productivity dramatically. A move away from mass production methods and towards technology-orientated specialized and higher value products followed. At the same time, the image of brand name products and quality were raised and fashions adapted to. Production sites have been located in low-wage regions where work-intensive contract work and part-production are carried out.

Since 1988 the number of mergers has risen both within the EC and worldwide, especially in the upper end of the market. This has led to the formation and strengthening of large multinational industrial groups. The number of employees continues to be cut by about 2% per annum, however. The unabated competitive pressure from South-East Asia and eastern Europe will, in all likelihood, deprive manufacturers in the EC of the competitive advantages they had gained for themselves during the 1980s. This will depend partly on the outcome of the GATT negotiations which should be completed by the end of 1993. The increased demand for textile products was met by raising import quotas.

The technological standard for thread and weaving in particular is very high in textile production. Production

stages and methods that have been separate up until now are increasingly being linked up by the introduction of appropriate machinery. This is why the requirements for machine operators, service personnel and systems technicians have risen sharply. Computer-aided production with computerized material input and product output is often the rule with the result that unskilled or semi-skilled workers now have very poor prospects in this sector. The tasks involved in designing patterns, refining, dyeing and finishing have become more important, however. Access to these occupations can likewise only be achieved through good specialized training. In this sector, therefore, the prospects are good to very good for well-qualified skilled workers, despite the general decline in employment.

7. Textile Clothing

While the textile industry seems to be able to function with fewer and fewer employees, the clothing industry remains a comparatively labour-intensive sector. Modern production methods are also suitable for contracting small production units, which can be seen in the large number of sub-contractors and small and medium-sized enterprises.

The number of enterprises employing 20 or more staff, for example, increased from 25 000 to 38 000 during the 1980s. This does not mean, however, that the number employed in the sector went up in a similar manner. On the contrary, it fell by around 3% per annum. Very small enterprises and small self-employing enterprises seem to have been the victims.

By specializing, differentiating its products, being flexible and moving production sites outside the EC, the European clothing industry has managed to maintain a high degree of international competitiveness. This, however, has entailed a high degree of dependency on the Single European Market. If

present production and employment levels are to be maintained, new markets, e.g. in the USA, Japan and in the newly industrialized countries, must be tapped. Beyond this, emphasis will need to be placed primarily on producing smaller batches of consumer-orientated and fashionable products of a higher standard. Stronger EC-wide cooperation both in marketing and sales can be seen in large multinational mergers and cooperation.

In contrast to the textile industry, the clothing industry was decidedly faced with technologically-induced changes until the late 1980s and early 1990s. It is becoming more and more crucial for enterprises to react promptly to market signals, which is why the spread of technology for the electronic exchange of data, automatic warehousing and logistical administration, as well as computer-aided article design have become more important. This brings important changes in the organization of work with it and induces changes in the requirement profiles in many areas. Beyond this, the system of producing parts in a production line, which has predominated until now, is being replaced more and more by alternative and more flexible team-work production methods.

On the whole, however, the sector seems to be heading towards a period of stagnation and decreased growth in the international arena. Exclusively national enterprises and a host of smaller sub-contractors will in all likelihood soon fall victim to the competition being waged on world markets. This will change the qualification requirements in a sector that has, up to now, been characterized by a multitude of simple workplaces, very small enterprises and cottage industry. It is of the utmost importance that more strongly formalized initial and continuing vocational training courses are conducted because of the higher requirements and the need for retraining in most producer countries.

8. Leather

The leather industry processes furs and skins into semi-finished and finished leather goods. The processes are divided into the tanning, preparing, dyeing and final processing of leather. It also includes producing and processing synthetic leather. The most important leather products are shoes, handbags, suitcases and leather clothing, although harnesses, saddlery and leather furniture are also produced.

The processing industry including tanning is dominated by small and medium-sized enterprises. Despite the traditional flow of international trade, this sector is rarely organized on a transnational basis.

During the 1980s, the number of employees fell by about 2% per annum, the number of enterprises by around 10% per annum. Even production fell since some of the production was relocated in low-wage countries, from which more and more finished products are also being imported. Demand also decreased through changes in fashion and this could be seen in particular in sales of leather clothing, handbags, suitcases, etc. The only segment of the market which experienced growth was that of leather upholstery, where the high demands for quality could apparently not be met by imported goods and products from outside the EC.

The number of people employed in this sector - including those working in the shoe industry - has declined in all EC Member States except Portugal. Tanneries employ mostly men, whereas the opposite is the case in the labour-intensive leather goods production. In recent times, however, similar trends as have already been described for the clothing industry can be detected in production methods and requirement criteria in this sector. The continuing reduction in personnel is being brought about largely at the expense of the least qualified

staff. The European leather industry can only continue to be competitive if it produces small batches of higher quality products and is more flexible in its production and this also requires quality-conscious and highly-qualified skilled workers.

9. Wood

In the early 1980s the wood-processing industry was in steady decline as a result of the lower demand for wood by the building and processing industries. In the last few years, however, the wood industry has experienced a certain amount of growth again. The demand for primary and secondary wood processing is estimated to have risen by around 7% per annum between 1989 and 1992. The introduction of the Single European Market is likely to strengthen trade within the EC even further.

During the 1980s, the number of people working in the wood industry fell by over 100 000 to 414 915 in 1990. Recently this figure has increased slightly again.

Wood processing is divided into the primary area of sawing and planing, and producing semi-finished products and into the secondary area which encompasses the sub-sectors of carpentry, cabinet-making materials and parquetry; wooden containers, cork and straw goods, including woven materials, brushes and brooms; and manufacturing wooden furniture.

The sector is characterized by a large number of small and medium-sized enterprises. Enterprises employing more than 20 people are an exception; family smallholdings and craft-trade enterprises predominate.

The wood industry has not been left unscathed by the introduction of new technology either. Productivity is

rising. At the same time, it is becoming harder and harder to find well-trained skilled workers due to the enormous progress that has taken place in production technology. If the rising demands for quality products and the growing number of customer's special wishes are to be met, however, the quality of vocational training must be improved very soon.

Within the area of primary wood processing, the EC is a net importer (importing primarily from EFTA countries and eastern Europe). At the same time, the EC exports large amounts of semi-finished products and building materials to other countries. In contrast to other processing sectors, the wood sector remains labour-intensive. This can be seen in the fact that wages account for 80% of the sector's gross value added.

The following products are classed as semi-finished products:

- Veneer, plywood, laminated wood and cabinet-making boards;
- Chipboard, chipboard variations, composite boards, wooden boards with mineral adhesives;
- Fibre-boards.

Beyond this, certain building components such as windows, doors, steps, half-timbering, floorboards and parquetry as well as exteriors and partitions are increasingly being made of wood once more.

Wood is undergoing a kind of renaissance as a building material in many parts of Europe as a result of heightened environmental awareness, which expresses itself through a greater demand for wooden prefabricated, frames and half-timbered houses.

The wood-protection industry and the industry responsible for producing wooden packing material, palettes and containers can be assigned to the wood sector.

The area devoted to furniture has shown a relatively strong growth, with the market in office and system furniture expanding in particular. Although wood still plays an important role in this, it has to compete with other materials such as steel, synthetic materials and glass. Composite materials are gaining in importance.

At present, the sector is seeing a concentration of activity out of which more and more large-scale enterprises are being formed. Increased cooperation with low-wage countries - especially those in eastern Europe - can also be observed.

Production is highly diversified. Modern production methods and the use of automated control and wood processing machines lowers production costs and allows even small batches of products to be tailored to customers' specific wishes in a manner that is user-orientated and cost-effective.

The furniture industry as a whole is subject both to sudden economic changes and to fashion trends, which are playing an increasingly important role in this sector. Competition for customers will intensify in the market for furniture for private houses. This will occur to the same degree as the number of inhabitants and the number of new homes needing furnishing decline. This will in all likelihood begin to affect the sector from the mid-1990s onwards. Sales in system and office furniture are expected to continue to rise, however. The low-wage eastern European countries have been extremely competitive for some time and will continue to influence the market in the next few years, especially in the lowest price ranges and quality levels. EC Member States will in all likelihood remain competitive for higher-quality furniture, however.

The quality and the vocational training of skilled workers will be a crucial factor in this context and there is still a demand for additional good school- and enterprise-based

vocational training places. Many skilled workers are not sufficiently acquainted with new production methods.

10. Building (Structural Engineering and Building Construction)

The building industry is one of the most labour-intensive sectors. In 1988 around 10 million people were employed in the building industry in the EC and EFTA countries, which represented 6.5% of the total workforce.

The building industry and its activities have a strong influence on other areas of the economy. Thus, it has been estimated that for every 100 ECU spent on building, a further 50-100 ECU is spent on other sectors.

The structure of this sector is characterized by a bipolarity between increasingly internationally-operating large-scale enterprises and craft-trade enterprises. Small and medium-sized enterprises dominate the market in the Mediterranean region. Around 90% of the enterprises in the EC employ up to 10 people, a little over 9% employ between 11 and 100 people, whereas only 0.5% of enterprises employ over 100 people. The largest number of enterprises employing over 1000 people can be found in the United Kingdom and France. In Germany, medium-sized enterprises with under 1000 workers play a more important part.

Approximately one quarter of all building activity is focused on building houses. In northern European countries, greater emphasis is placed on building detached family houses, while southern European nations build more multi-family housing. Industrial, office, business and hotel building account for a further quarter. The number of contracts for public buildings for schools, administrations or hospitals is tending to decline. Repairing and modernizing buildings is becoming more

and more important and accounts for around 40% of EC building activity. Civil engineering (see next section) makes up one-fifth of work conducted within the sector.

Following a fall of 10% between 1980 and 1985, the amount of production generated by structural and civil engineering in the EC rose by 22% between 1985 and 1990. To a large extent, this swing can be attributed to the demand for construction by enterprises, i.e. industrial construction, office buildings and in civil engineering. The number of people working in the sector has increased and it is likely that it will stabilize as the sector continues to grow by an estimated 2.5% per annum until 1995.

At the same time, this sector is characterized by insufficient numbers of qualified and highly-qualified skilled workers. This can be seen most vividly in areas that are gaining in importance, namely in repair, modernization and restoration.

Technological advances have primarily influenced building methods, the use of materials and machines and the organization of building sites. These changes affect small and medium-sized enterprises after a short time-lag.

Production levels are primarily raised by an increased use of purchased materials and services, such as pre-assembled parts, ready-mixed concrete, plant leasing and through an interplay of main contractors and sub-contractors, i.e. upstream and downstream enterprises.

Wide-ranging changes in production technology coupled with rising commercial and organizational requirements have brought about significant changes in personnel structures within enterprises. The amount of administrative and clerical work has increased as has the proportion of skilled workers at the building site, while the proportion of semi-skilled workers and labourers has declined.

A further characteristic of this sector is the proportion of skilled workers aged over 50. For this reason, great efforts are being made to recruit younger skilled workers and staff is constantly encouraged to engage in further training. Here too, the problem of the magnitude of personnel costs is subordinate to the problem of obtaining qualified staff.

The building sector is still characterized by high fluctuation in staff as a result of its dependence on economic factors and health-impairing working conditions. In the light of this, improvements in working conditions and initial and continuing vocational training serve to improve the attractiveness of this sector for its staff.

Customers' increased ecological awareness is forcing the building industry to rethink its building methods and its use of building and raw materials. There has recently been a rapid growth in building methods that save on resources and energy and in the use of environmentally-friendly insulating materials, paints and varnishes. This effects both new building and the increasingly important restoration and modernization of buildings. It seems, however, that these changed qualification requirements have not always been incorporated sufficiently into initial and continuing vocational training for building workers. In this field and also in the field of restoring old buildings that are worth preservation and other listed buildings, there is a high demand for continuing training and/or retraining. At present this is being met only in part.

Because new building dominated in many regions of the EC over the last few decades, the highly-specialized craft trade qualifications that are now in great demand in restoration work have been all but forgotten. They have only recently been promoted systematically so as to preserve the EC's cultural heritage.

11. Civil Engineering

The dynamics of the Single European Market benefits this sector in particular. The expansion of transport infrastructure plays a significant role when coupled with the expected exchange of goods and increased mobility; railways, the Channel Tunnel and the bridge spanning the great Danish Belt are but a few striking examples. Beyond this, local public transport and road networks are being renewed and adapted in conurbations and large cities. Finally, as a result of greater public awareness of environmental issues, more attention is being paid to sewage disposal, water supply, soil rehabilitation and the upkeep of land - particularly around rivers and by lakes - coastal protection and the creation of national parks and recreational areas near cities.

Aside from the industrial construction mentioned above, civil engineering is the pillar on which the prosperity of this sector rests.

The following spheres of activity can be distinguished:

- Earth-moving work and (cultural) excavation;
- Bridge-, tunnel- and drain-building, including drilling;
- Hydraulic engineering, including river-, canal-, harbour-, stream-, lock- and dam-building;
- Highway-building (roads, railways and airports);
- Irrigation, drainage, water purification, waste water disposal, etc.;
- Rubbish disposal, removing soil contaminated in the past and environmental pollutants.

The changes in employment levels in civil engineering are largely the same as those already mentioned with regard to structural engineering, i.e. highly-qualified staff are becoming more important both in the office and on the building site. Beyond this, civil engineering enterprises are far less

flexible and are tied to particular building branches. Civil engineering enterprises rely far more heavily on public investment than those in structural engineering.

While many - sometimes highly-qualified - staff had to be made redundant in the 1970s and 1980s as a result of the cut-backs in public investment, enterprises are presently looking to recruit qualified staff again; often in vain. Training systems and the labour market are not sufficiently prepared to meet the demand for greater staff numbers needed as a result of the present period of expansion. This situation seems to be particularly drastic in Portugal, Spain and Greece as well as Germany, where civil engineering is one of the few sectors that is expanding in the area of what used to be the GDR.

Even within the EC, cross-border cooperation is an exception rather than the rule in this sector. Although a certain proportion of contracts are required to be put out to tender at EC level, civil engineering enterprises as a whole still do not seem to be very mobile. With the exception of a few large-scale building sites, there is little international cooperation in this sector. This is likely to change quickly as European economic integration takes shape.

12. Iron/Steel

The iron and steel industry encompasses the following production stages:

- Producing coke;
- Preparing ore;
- Producing pig iron;
- Producing steel and treating it metallurgically;
- Casting steel;
- Hot-rolling contoured and flat sections;
- Cold-rolling flat sections;

- Refining surfaces with metallic or organic coatings;
- Forming steel through forging, drawing, extrusion-moulding, rocking, etc.

In this way, the steel industry produces the following semi-finished and finished products including low carbon and stainless steel and steel alloys:

- Hot-rolled flat sections: Hot-rolled strips, heavy and medium plate, steel hoop and similar products;
- Hot-rolled contoured sections: Heavy and light profiles, reinforced concrete, hot-rolled rods, etc.;
- Cold-rolled flat steel: Sheet and black plate, in part with refined surfaces through tin- or zinc-plating or coating with aluminium, synthetic or similar materials;
- Cast and forged products;
- Pipes (cold- or hot-rolled, seamless or welded).

As a result of a rise in demand from the building and car industries and the mechanical engineering sector, production has risen sharply since 1987 in line with a global increase in industrial production. During the same period, however, the number of people working in the sector has fallen by around 3% per annum. Between 1980 and 1989, the EC employment figures in this sector decreased by 33% to 395 000. With the aid of the rules of the ECSC (the European Coal and Steel Community) and comprehensive social plans, retraining and continuing vocational training programmes, the reduction in staff numbers could, for the most part, be carried out in a socially acceptable way.

At the same time, productivity has been increased through new and changed production methods; and the widespread introduction of the continuous casting method has helped to reduce and combine the number of production stages and lower the amount of raw steel required. In 1989, continuous casting accounted for virtually 90% of steel production in the EC.

The rationalization of the production process and the combination of production stages drastically changed the occupational requirements of staff. New occupational profiles came into being for skilled workers and technicians. Specialized skilled workers had to be retrained. The number of specializations was cut down to only a few.

The relative prosperity of the sector is stagnating at present, especially as a result of the reduced demand from the motor vehicle and arms industries and the growing competition from central and eastern European countries which, due to low personnel costs and large capacities in heavy industry, are pushing their way into the world and EC markets. At the same time, the competitiveness of the steel industry is being affected by the high costs involved in investing in environmental protection and emission reduction facilities.

Beyond this, large-scale enterprises are increasingly having to compete against small and/or very small enterprises that are able to work cost-effectively because they use modern arc furnaces and scrap metal sorting and cleaning equipment and because of the growing significance of reusing industrial, chassis and demolition scrap metal. This is particularly the case for rolled and building steel, but also for high-grade steel used in the motor vehicle industry. The expansion and growing importance of these very small enterprises depend, however, on the development of electricity prices.

A drastic reduction in the number of workers has also been noted in the steel rod industry and this is likely to continue in future, also as a result of the growing competition from eastern Europe and newly industrialized and developing countries.

The foundry sector is one of the most important industrial suppliers of semi-finished metal products - i.e. not just those made from iron or steel alloy. A distinction is made

according to: a) the process used, such as sand casting, shell mould casting, chilling, die-casting, centrifugal casting and continuous casting; b) the quality of the final product, e.g. waste-wax or precision investment casting and art casting; and c) the cast material - steel, grey cast iron, malleable cast iron, non-ferrous metals or synthetic materials.

Many enterprises in the motor vehicle, mechanical engineering and systems industries have their own foundries. Beyond this, there are numerous contractor foundries that supply the aforementioned industries.

Production of cast iron, cast steel and malleable cast iron decreased during the 1980s, while non-ferrous casting grew, accounting for approximately 18% of total EC production in 1989. Here, light alloys have played an increasingly important role. Furthermore, the quality of products was upgraded whilst both energy and raw materials were saved by using more efficient materials and introducing computer-controlled construction technology.

During the 1980s, the number of people working in the sector fell by 30%; this figure was far worse than the 11.8% fall in production volume seen in the five most important EC Member States. To the present day, the casting industry has remained dominated by small and medium-sized enterprises. More than half of all foundries employ less than 50 people. Automatic moulding facilities have been developed to produce large batches and these are utilized rationally using multiple shift operation. As a consequence, enterprises employing over 1000 people have developed.

Although foundries were originally located near raw steel producers, they are nowadays more likely to be found near their clients, i.e. near motor vehicle industries and/or larger mechanical engineering enterprises in particular.

Some of the more labour-intensive parts of production, such as model casting, cleaning and finishing processing, are likely to be rationalized and automated even further by CAD/CAM and the introduction of robots. The traditionally highly-qualified skilled foundry workers, who have constantly had to engage in further training in the past, will continue to be faced with new challenges. This sub-sector will also meet stiffer competition from eastern Europe and this is another reason why still more emphasis needs to be placed on producing high quality products. Because the sector depends on the motor vehicle and mechanical engineering industries, however, its prosperity relies on their development.

13. Metalworking (Including Mechanical Engineering, Motor Vehicle and Plant (Systems) Construction)

The EC is the world's largest producer of mechanical engineering products and metal goods. A major crisis in the early 1980s brought about by slow investment developed into a strong recovery towards the end of the same decade. Modernizing machinery and raising the degree of automation has brought new life into the sector and substantially increased capacities. The speed of development has slowed down again in recent times and is threatening to lead to a period of stagnation.

This sector encompasses a wide range of products. It includes in particular: Roller bearings, hydraulic and pneumatic construction elements, combustion engines, cranes and lifting devices, machine tools and robots. Beyond this, it is involved in equipping complete industrial installations, production lines and other production sites. New hydraulic, pneumatic, micro-electronic and laser technology as well as new materials have given the sector a new boost and encouraged innovation. There is also a trend towards combining machines and processes into more and more comprehensive systems.

The dividing line between metalworking and mechanical engineering on the one hand and electrical engineering and electronics on the other is becoming increasingly blurred. The wide-spread introduction of combined machine systems - which has been aided amongst other things by electronic data processing technology and the relevant software developments - has played a significant role in strengthening the sector. Although the EC has led the world in this sector up until now, this lead is being threatened by increased competition, especially from Japan and from some South-East Asian countries.

The afore-mentioned innovations also affect staff requirements structurally. The need for qualified skilled workers and engineers rose significantly and could and can only partly be met on the labour market by young vocationally trained skilled workers. For this reason, staff further and continuing vocational training are becoming more and more important for the sector.

On balance, while productivity rose sharply in the 1980s, the level of employment fell by around 20%. In 1990, however, over 2.4 million people were employed in mechanical engineering alone (not including electrical engineering, precision mechanics and boiler-making).

Mechanical engineering work has traditionally been undertaken by skilled workers, although this has not been the case for motor vehicle construction, where unskilled and semi-skilled assembly workers have, until now, dominated on the production lines. In the motor vehicle and automobile industries, the number of people working on production lines and skilled workers doing primarily physical work has declined in recent times in favour of those performing non-manual labour.

Taylorist and Fordist methods of organizing factories have been replaced by robots and automatic machines as well as

team-work and lean production methods. The depth of production is being reduced at large automobile plants and more and more motor vehicle components are being produced by sub-contractors using flexible production methods.

Until recently the motor vehicle industry preferred to use semi-skilled production line workers to perform repetitive work producing particular parts. These now need to become more qualified or be retrained; many of them will no doubt be affected by job cuts.

Qualified skilled workers, technicians and engineers will continue to have good or very good prospects throughout the mechanical engineering sector. However, since it is unlikely that production will expand significantly in the 1990s, the total number of people working in the sector will probably decline.

Germany, Italy, the United Kingdom and France occupy the leading positions in this sector with 45%, 18%, 15% and 11% of the total turnover respectively. In these producing countries, the enterprises are concentrated in a few regions which provide not only good transport infrastructure but also sufficient numbers of highly-qualified staff because of good training centres: institutes of higher education and/or universities. In Germany these regions are the *Länder* of North Rhine-Westphalia and Baden-Württemberg, in the United Kingdom it is south-east England, in France they are the Paris basin and the north-east, in Italy it is Lombardy and in Spain Catalonia and the Basque Region.

Recycling machines, raw and other materials, and placing greater demands on noise- and emission-controlling substances affects both occupational requirements and working conditions. Increasing the use of team-work, breaking down rigid hierarchies within enterprises, abolishing repetitive part-production and production line work and raising the

responsibility of each worker should contribute towards making the working conditions in this sector attractive again, even for highly-qualified employees.

Research and development, the intensity of which has grown, has an important role to play. In this, Europe leads Japan and the USA, as can be seen in the number of patent applications. A common problem is that internal improvement suggestions and patentable inventions from staff which are not implemented are deliberately not passed on or registered for patents so that others cannot gain competitive advantages from them. As a result, many innovations are not available on the market.

The increase in cost-oriented thinking and the reduction of vertical production depth by car producers and other large motor manufacturers threatens, in times of recession (as was evident in early 1993), a decrease in innovation and investment in research and development. A similarly dangerous policy would be to reduce the sector's relatively high investment in initial, continuing and further training for new recruits. Both of these could endanger the relatively strong position of this sector within Europe in the medium term.

14. Electrical Engineering/Electronics

The **electrical** sector encompasses producing, assembling and installing the following:

- Insulated wires and cables;
- Electrical machines including electrical motors, generators, transformers, switches and switchgears;
- Electrical devices and basic industrial equipment;
- Electrical household devices;
- Lamps and electrical lighting equipment;
- Telecommunications materials;
- Electrical and electronic measurement and recording

devices and electrical medical equipment;
- Home electronics products, such as televisions, radios, sound and image-recording and -reproducing devices, records and magnetic tapes.

The **electronics** sub-sector encompasses the following product ranges in particular:
- Electronic components (semiconductors, microchips, bulbs and electric tubes, resistors, condensers, PCBs, etc.);
- Data processing and office technology;
- Radio engineering, radar and microwave technology;
- Home electronics products, such as televisions, radios, sound and image-recording and -reproducing devices, records and magnetic tapes.

Within the field of home electronics and telecommunications equipment, as in all other fields within the electrical engineering sector, electronics is playing an increasingly dominant role.

It is becoming more and more difficult to draw a dividing line between the electrical engineering and the electronics industries. Most enterprises, therefore, are tending towards operating in both areas, especially since it is difficult to distinguish between electrical engineering and electronic production methods and products. Increasingly, electronic components are to be found in what used originally to be electrical products.

Two-thirds of the goods delivered by these industries are capital goods. Consumer goods account for one-fifth. The remaining products are used within the sector. The electrical and electronics industries are characterized by a high degree of concentration. A few German, British, French, Italian and Dutch corporations dominate the European market. Nonetheless, they see themselves subject to increasing competition from Japan and South-East Asia, which have consciously aimed to

expand their position both in European and world markets in electronic components, data processing, home electronics and, in recent times, in industrial equipment, computer-aided production systems and machine tools.

As a result of this competition, the expansion of the sector within the EC, which could be seen until the late 1980s, has virtually come to a standstill. At the same time, Japanese and US-American enterprises have built or taken over factories within the EC, with the result that competition has stiffened not only on world markets but also within the EC.

During the 1980s, the total number of people employed in the sector fell by around 2%, while productivity and production volume increased in nearly all areas of the sector. In 1990, the sector still employed nearly 2.4 million people. Employment rates only rose in Germany and, to a lesser extent, in France and the Netherlands, whereas they fell - in part considerably - in Great Britain and Italy. There is a tendency in the sector towards shifting the production of components and mass products to low-wage countries so that EC Member States can concentrate on assembly and the development of new applications.

This also affects the demand for skilled workers: Highly-qualified personnel such as technicians, engineers and software specialists are in great demand, while the demand for less qualified staff is diminishing.

The electronics industry in particular has to act more flexibly in accordance with customers' wishes, which are changing more and more rapidly. New producers - including small and medium-sized enterprises - have good chances when competing with large-scale enterprises in the field of micro-electronics and especially in software development.

Within the sphere of home electronics and personal computers

with the relevant software, the few remaining European enterprises seem to have little hope of catching up with their competitors in Japan, South-East Asia and the USA. With the exception of fax machines, where Japan has a virtual monopoly, Europe still has a hold in the telecommunications market, although this may be due to the fact that public enterprises have dominated the sector until now.

The electronics industry has good prospects for growth despite the afore-mentioned challenges, especially as demand for the products of most sub-sectors is expected to increase by at least 5%. This underlines the good prospects for qualified and highly-qualified staff.

Although few major changes can be seen in the profiles of occupations at skilled worker level, the increasing speed of innovation and the changing organization of work has meant that new profiles and areas of specialization and responsibility can be expected for technicians and engineers. Specialized institutes and institutes of higher education must make even greater efforts if they are to keep pace with these developments.

15. Motor Vehicle Repair

Motor vehicle repair enterprises are usually small or medium-sized enterprises of an essentially craft-trade nature. Their links with car manufacturers differ greatly. They are only rarely a part of a production concern; they are mostly linked to producers by strict contracts. There are, however, many small independent repair enterprises in all EC Member States. Many enterprises sell new cars and repair the corresponding makes.

Cross-border cooperation has been the exception so far since markets are largely tapped separately by the mainly European

manufacturers. As a result, the mobility of skilled workers is still relatively low in this sector.

Growing product complexity has meant that qualification requirements have increased and become harmonized for the most part in all Member States. In recent times, the growing importance of electronic components for cars and modern electronic methods of measuring and testing motor functions and adjusting characteristics have brought far-reaching changes. The requirements skilled workers must meet - especially with regard to error diagnosis - are changing constantly through the networking of subsystems of motor management, safety components and improvements in passenger comfort. As a result of the make- and even model-specific differences in these systems, continuing vocational training is becoming an unavoidable prerequisite; even more so now that workers and/or enterprises are being tied to particular makes.

Further and continuing vocation training for skilled workers has long played an important role in this sector as a way of adapting workers' qualifications to the respective new car and motor generations. This training is usually conducted by the manufacturer so as to maintain or enhance the link between enterprises and the brand of car produced by the manufacturer.

Higher quality production methods used by manufacturers, better raw materials and easy-to-maintain constructions have meant that modern vehicles need less repairing on the whole than was previously the case. Since demand has been high right up to the early 1990s, this has not adversely affected factories as yet.

Due to increased environmental awareness and the stricter environmental protection directives that follow from it, factories have been faced with new tasks such as installing and servicing catalytic converters, measuring emissions and the corresponding servicing of motors, waste gas recycling

systems, etc.

Virtual market saturation, competition from other forms of transport (cf. the section on transport and traffic) and, last but not least, the increase in criticism of the environment-destroying effects of fast-growing personal transportation seem to be lowering the demand somewhat for private cars in the medium term.

With growth decreasing by 1% per annum since the beginning of the 1990s, the car industry seems to be past its zenith. Due to its overall importance for national economies, however, this is likely to have grave consequences for the number of people employed by both manufacturers and dealers, especially since rationalization investment is still in full swing.

One in nine work places in the EC depends either directly or indirectly on the motor vehicle industry.

Since young people continue to be attracted by cars, there are too many rather than too few applicants for training places and work in this sector. Given the afore-mentioned trends, however, it is unlikely that this interest will continue. At present young people should be advised against entering this field on account of the reduced demands for skilled workers in motor vehicle enterprises and the stiffening competition which is threatening to close more and more enterprises.

16. Chemicals

The EC is the largest producer of chemical products worldwide. Although growth was relatively high in the second half of the 1980s at 5% per annum, it is declining again somewhat in the early 1990s.

This industrial sector is strongly dependent on oil prices

and, as a cause of a number of environmental problems, it is being confronted with ever stricter directives from EC Member States and the EC itself.

The chemical industry employs 7% of the workforce within the processing industry, i.e. 1.9 million people. Although a decrease in the number of employees could be observed in this sector as in all other processing industries until the mid-1980s, the production boom that followed saw figures stabilizing once more.

The industry processes raw materials such as crude oil, minerals and metals as well as agricultural products into the following products in particular:

- Basic chemical products;
- Fertilizers and nitrogenous compounds;
- Raw synthetic materials and synthetic rubber;
- Pesticides and agro-chemical products;
- Paints, varnishes and other coatings;
- Pharmaceutical and biological products and medicaments;
- Soaps and detergents, cleaning and polishing agents, fragrances and body care products;
- Chemical fibres.

Although there are around 9000 enterprises within the chemical industry in the EC as a whole, the degree of overall concentration is relatively high: Five companies produce approximately 40% of all chemical products.

Most of those working in production itself have a comparatively low training and qualificational level. The service and maintenance tasks of continuous rotating shift enterprises require workers to be in good health and physically strong, while less and less specialized qualifications are being required. In the up- and downstream areas and in laboratories, however, the overall level of

qualifications is high to very high. This is partly due to the great importance of research and development in this sector. R & D accounts for approximately 4.5% of the total turnover of the chemical sector. In the pharmaceutical and agro-chemical area, R & D accounts for as much as 10-12% of the turnover. New developments are occurring in particular in biotechnology and the controversial area of gene technology.

The most important areas are:

- Gene technology, in which genes that are known to be responsible for generating specific characteristics are isolated and reorganized with the aim of creating organisms with new and precisely determined characteristics for use in, e.g. industrial synthesizing processes in chemistry and/or pharmacology;
- Cell fusion, in which characteristics from different cell types are fused into a single cell;
- Enzyme technology, in which biological catalysts are used to invoke and/or produce certain required chemical reactions and syntheses;
- Process technology, used to enable biological production processes, including the necessary preparatory and process-control technology, to be carried out on a large scale.

Innovations also find expression in the development of new working materials, including synthetic adhesives, polymers, valuable synthetic materials, ceramics, coatings and functional materials. These materials have helped the development of important new products - silicon, gallium arsenide, optical fibres, membranes, etc - for use in micro-electronics.

The chemical industry is held responsible for environmental problems brought about by air- and water-polluting contaminant emissions and the emission of nitrogen oxide, carbon dioxide

and sulphur oxide in particular, which - amongst other things - cause acid rain and contribute to the greenhouse effect. The high level of emissions is a result of the large amount of energy that needs to be consumed in the processes employed in chemical production and in the diverse synthesis processes.

Beyond this there are problems associated with waste treatment and removal. Recycling plastic waste, minimizing emissions by using less solvents and substituting CFC coolants are a few of the greatest challenges to this sector.

Growth will be reduced in future in the area of the production of basic materials in Europe due to increased competition from the newly-industrialized countries, which have fewer environmental protection directives. The prospects should be better for the higher value product areas of the pharmaceutical industry, in cosmetics and the more valuable and recyclable synthetic materials, in paints and varnishes.

17. Print and the Media

In recent years the printing and publishing sector has seen a high degree of concentration and rationalization. Those employed in the sector have been faced with great challenges as a result of new production methods and a shift of work places away from production itself into up- and downstream areas and the combination of word, image and also sound processing through new computer-aided processing technology. Many qualified work places in production itself have been replaced by highly-qualified office work. Nowadays, layout, graphic design and copy are hard to imagine without the use of PCs. Printing presses are controlled automatically. Manufacturers often supply their own specialized technicians, service and repair personnel, so printers employ fewer and fewer people with these qualifications.

This has led to the creation of new occupational profiles, although the old profiles still exist within the framework of the more artistic and craft-trade production methods. They are disappearing rapidly, however.

The next step in the development can already be predicted: The occupational profiles of the printing sector in the narrow sense will be combined with those of the media. New ways of storing information, easily-applicable and user-friendly software, video and CD cassettes are progressively taking over the information market. Inexpensive and user-orientated telecommunication means enable information to be obtained both quickly and cheaply.

The newspaper, magazine and book market continues to have good prospects, although the range of its products will probably be reduced. The printing and publishing sector seems likely to continue to grow by 3%-4% in the coming years. The area of the so-called new media - cable television, satellite television, pay-TV and video - is expected to grow to an even greater extent, at an estimated 6% per annum. Both sub-sectors will experience a dynamic development, especially with regard to the previously unmet demands from eastern European countries.

The cinema market will probably shrink, however, although the higher demands from public and private television stations will mean that the film industry itself is unlikely to be affected since it also produces television features and video films.

The networking and distribution of these developments will depend to a large degree on the renewal of telecommunications services and the speed with which cost-effective digital speech, text and picture transmitting networks are made available to consumers and small enterprises (ISDN). The technical standards that exist within the EC, which are still

very different and often incompatible with each other, must be harmonized and made more user-friendly. If this succeeds, with the aid of specific EC programmes if necessary, it will have wide-ranging implications for those employed in the sector and for the sector itself. Occupational and requirement profiles will in all likelihood change again in the near future.

18. Office/Administration

The clerical and administrative areas of activity are represented in all the sectors dealt with up to now and above all in the various service sectors, including the public sector, which have not yet been dealt with. While the range of activities has not changed basically, the forms of processing, diffusing and analyzing information have changed. Computers are now being widely used as a writing tool and as an administrating instrument in personnel management and book-keeping. Large computers with decentralized terminals are increasingly being replaced by networked personal computers.

This means that in offices, too, individual workplaces have become more capital- and labour-intensive. Standardized routine work has been done away with to a great extent and secretarial duties are developing into the more comprehensive duties of a clerk or an assistant. This has led to higher qualification requirements for skilled white-collar workers, too, who have mainly carried out tasks assigned to them. Now they are having to cope with more complex tasks using more demanding software.

Modern telecommunication means for transmitting texts such as telefax and BTX or mail-box systems are being used alongside the traditional forms of voice and text transmission. Organizational duties, tasks involving customer service, stock-keeping, purchasing and sales are increasingly being

combined at the individual workplace in each relevant field of work. Such a combination of tasks requires from every individual employee at all levels of in-company hierarchy a high degree of flexibility and willingness to communicate. Data processing specialists, programmers and electronic data processing operators have emerged as new occupational fields especially in the clerical field.

The growing importance of administrative activities in all sectors has prevented a major reduction of staff through rationalization and increased productivity so far. The demands put on office work have, however, resulted in a considerable reduction in the number of simple jobs. This applies to an even greater extent to the banking and insurance sector. Here it has become possible to combine the previously separated areas of activity such as customer service and general financial services (front office and back office) by means of computers and networking them. Taking the current rationalization and concentration trends in the banking and insurance sector into account, it would seem unlikely that the high number of persons employed in the area of financial services, including insurance, can be retained. Approximately 3.5 million persons were employed in this sector in 1990. The drop in prices which is to be expected from growing competition through the Single European Market might well put the partly enormous profits of banks and insurance companies under pressure. There will then be an attempt to save on personnel costs.

Shifting routine work away from the banks to the customers who use a chip card to call up printouts of account statements and money on their own, home banking and other developments might take some strain off the banks in labour-intensive fields. This would enable employees to concentrate on more demanding activities in the fields of loans, securities and other financial services. Consequently, a considerable reduction of personnel can be expected.

As in nearly all the sectors mentioned, less qualified workers will face the greatest risk of becoming redundant due to structural changes. Thus, for example, the experts no longer regard the occupation of a cashier, which was previously considered to be especially important, as an occupation in its own right. The duties of a cashier are for the present-day bank clerk one among many others he has to cope with.

The increased requirements and the extension of the services offered by banks and insurance companies find their expression in the great efforts banks, insurance companies, saving banks and providers of financial services make with regard to further and continuing training for their personnel. Every larger company offers a wide range of continuing training courses. If they want to advance within the company, employees must attend such courses. Such continuing training courses upgrade employees' specialized qualifications and drills loyalty towards the company, an aspect considered indispensable.

The internationalization of financial services involves new and extended tasks, making a knowledge of foreign languages and experience abroad particularly important. The liberalization of the central and east European markets also entails new requirements. Both internationalization and liberalization will probably lead to an expansion in the range of activities in banking and insurance. Banks and insurance companies generally tend to demand higher qualifications than those required for skilled workers mainly carrying out tasks as described in the EC profiles at this level.

19. Trade

We can divide this sector into two sub-sectors: into wholesale and foreign trade and into retail trade. Since there are no major differences in the basic requirements, the distinction was not made in the occupational profiles. In accordance with NACE 61, the EC classification for economic sectors, wholesale traders are defined as enterprises which, exclusively or mainly on their own behalf, resell goods to retailers or other wholesalers, to manufacturers for further processing, to craftsmen or other commercial users or to bulk consumers.

In accordance with NACE 64 and 65, retail trade is in particular responsible for distributing the following goods to final consumers:

- Food, drinks and tobacco (products);
- Medicine, medical goods, cosmetics, cleaning agents and drugstore articles;
- Clothing, shoes and leather goods;
- Furniture, household textiles and furnishings;
- Household appliances, fittings, instruments, hardware and ironmongery;
- Motor vehicles, motorbikes and bicycles;
- Fuel and lubricants;
- Books, magazines, stationary and office supplies;
- Photographic and optical devices, radio and TV-sets;
- Jewellery, gold and silver articles.

A great number of these tasks are also carried out directly by manufacturers or freight companies, by mail order businesses and telephone and TV selling. The dividing line between production and sales, between wholesale and retail trade, delivery and quality control, manufacture and packaging are becoming more and more fluid, making the selling chains increasingly non-transparent.

Administration, purchasing and sales take place at different

locations. Sometimes they remain closely related to production, sometimes these activities are passed on to wholesale trade or even directly to retail traders. It depends on the product and the firms, which have individual preferences with regard to specific forms of organization. Commonly applied just-in-time production techniques depend, for example, to a high degree on the close connection between the manufacturer and the wholesalers, retailers and freight companies. Should the just-in-time principle become even more widespread, traders risk being partly excluded through the direct contact of manufacturers and suppliers.

Interdependencies lead to a growing interchangeability of skilled workers in the relevant fields of work. Requirement profiles have become even more similar as a result, although knowledge about certain products will remain indispensable in some sub-sectors such as photographic and consumer electronics, medicaments, motor vehicles and motorbikes, clothing and books.

The traditional wholesale trade comes under twofold pressure because, on the one hand, manufacturers are (increasingly) building up their own distribution channels and, on the other hand, retail trade is forming chains. There is a concentration on larger shopping centres which conclude supply contracts directly with the manufacturers. The retail structure in northern Europe is already strongly dominated by large-scale enterprises and shopping centres while in southern Europe small-scale retailers continue to have the upper hand. A certain harmonization in shopping habits is occurring, however, although tastes remain different both in the food and non-food areas.

Europe-wide sales and marketing systems are emerging with the Single European Market. A rapidly growing concentration of companies will likely come about as a result of the increasing use of technologies and modern means of communication,

improvements in the transport systems (see the relevant section), the increasing diversification and vertical integration of the various elements in the selling chain. Since private households are spending less and less money on traditional retail products and allocating a larger portion of their income to housing, leisure time, travel and other services, competition in retail trade will probably continue to rise.

Trade including stock-keeping and the distribution of goods is still marked by a high portion of simple jobs. The jobs of cashiering, stacking shelves and ordering goods are being more and more closely linked by means of modern information systems.

Although auxiliary work is still important, such jobs are on the decline. Skilled workers have to acquire higher qualifications if they want to have stable employment and advance in this area. The requirements for marketing and customer service will likely rise in view of the above-mentioned competition. New trading forms such as direct marketing by the manufacturers will increase as a result of modern means of telecommunications such as telefax, BTX and teletel.

Up to now small and family-run enterprises have dominated wholesale trade. This will probably change in the future because major mergers are taking place. Mergers and a higher degree of automation will lead to a general decline in labour demand in all likelihood.

In retail trade, automation is causing a certain "deskilling" of employees; part-time work, capacity-related work, part-time employment of students and housewives are on the rise. On the other hand, management is becoming increasingly decentralized and is shifting to individual divisions or branches which prefer to employ small, interdisciplinary and well-qualified

teams who are also responsible for marketing. Stock-keeping is becoming highly automated, which means that those working in store-rooms will have to carry out more less-skilled activities.

In general the sector is marked by rather contradictory developments, i.e. there is a trend towards polarization in qualification requirements: Those employees aiming for stable employment in this sector have to obtain high qualifications, either within the framework of initial training or within the framework of constant further training which is becoming more and more important. Others will be assigned to low-grade work and have few or no opportunities at all to obtain qualifications. Personal responsibility will be reduced to a minimum while at the same time modern information systems will make the control of efficiency, profitability and reliability more complete. In view of growing unemployment and the fact that replacements can be easily found in the labour market, competition for unskilled/semi-skilled work will increase while working conditions will deteriorate and labour intensity will rise at the same time.

Even skilled workers mainly carrying out set tasks as described at EC Level 2 will in all likelihood run the risk of being affected by this competition if they do not make great efforts with regard to their own further training. This means that training centres and specialized institutes need to make training more attractive and direct their attention to modern technologies and telecommunications if they want to provide their participants with the qualifications they will require.

Another important category for occupations in this sector continues to be a knowledge of foreign languages and the ability to process and diffuse information quickly, i.e. general communication skills. Although knowledge of cost accounting and book-keeping is still required, it no longer plays a dominating role for the individual clerk at this level

because strategies are often prescribed by the management and transmitted to them via software.

III Conclusions

If we examine the current trends throughout all the sectors that have been dealt with, we will note quite contradictory developments: Although in many cases higher qualifications are being required, this is not true of all sectors. In some areas we can even observe lower qualification requirements than in the past, which seems to go hand in hand with a destabilization and flexibilization of certain jobs. Stable employment areas, and this applies to all sectors, are only open to those who have obtained qualifications at this level or can prove they have gained experience in the relevant occupation and/or completed further training.

The responsibility for acquiring such minimum qualifications must not rest with the individual school-leaver or worker as is, regrettably, too frequently the case. In view of the trends indicated here, the provision of qualifying training urgently needs to be increased and extended, all the more so since it is becoming increasingly difficult for an individual to acquire the relevant qualifications during his working life.

Production systems are becoming more and more complex and less transparent. Complex information and data processing systems and automatic machines connected to them have largely replaced physical and intellectual routine work. The qualifications of the elite of skilled workers can be found in these automatic machines. Skilled workers only need to understand them, they no longer need to run them with the precision and speed required in the past. In commercial and office work we note a trend towards a polarization between simple workplaces and highly qualified job areas. Here qualification requirements

are rising even more sharply than in the narrow area of industrial manufacturing.

Staff units, upstream and downstream areas, research and development, marketing and highly qualified service jobs are on the rise. These areas need, however, skilled workers who are able to develop their own initiative and creative potential - abilities that were not so much desired or required in the times of mass production. Today these areas of activity require more in-depth training at specialized institutes or universities or at relevant continuing training centres, i.e. training at a higher level. This on the whole legitimizes the trend of pupils and students to attend school longer in order to acquire higher qualifications. Whether or not the way these schools and the teaching contents are organized meets the requirements of modern production and service companies needs to be questioned, however. The fact that despite the high unemployment rate, companies are looking for qualified and highly-qualified skilled workers shows that public and private, in-company and extra-plant initial and further training courses are not equipped (neither with regard to quantity nor to quality) to meet the challenges that have gone hand in hand with structural changes. New ways of financing, organizing and providing training courses must be taken if we want to preserve and extend the competitiveness of European industry.

In order to avoid inhibiting free market forces among enterprises, among the Member States and among competing industrial regions, it is of prime importance that target figures for tax incentives, levy financing systems and for the extent of government expenditure be laid down. Only in this way will it be possible to keep the promises so frequently made by politicians: to guarantee initial training, access to continuing training and free choice of occupation and employment in the Member States and throughout the EC. It cannot possibly be allowed that companies which invest enough

in the initial and continuing training of their skilled workers and executive personnel are penalized by losing competitiveness while other companies that are less committed or not at all committed benefit from the training schemes of the others; they recruit the skilled workers trained elsewhere and are thus able to work at lower costs.

Growing environmental awareness affecting all occupations and jobs, the requirements of modern information and communication systems, new requirements in connection with the Europeanization and internationalization of labour markets, and new requirements accompanying new production conditions result in an enormous demand for continuing training for all the workforce. Continuing training, both in the individual's interest and in the interests of companies and the national economies, is increasingly becoming an integral part of what must be regarded as paid work and work that has to be paid for. The conditions for this have, however, still to be created through corresponding collective agreements and legal regulations.

In the building sector in nearly all EC countries levy systems exist on a voluntary basis or prescribed by law. Under these systems, enterprises that invest little or not at all in the training and/or continuing training of their employees have to pay higher contributions. Such levy systems should be introduced to all sectors of the processing industries and particularly in the more dynamic service sector.

The EC should also develop common ideas and discuss relevant recommendations with the social partners both at inter-professional level as well as at sector level in order to reach broad agreement. A common structural and industrial policy deserving the name also requires that generally binding target figures be laid down for financing training and continuing training of human resources. It goes without saying that their concrete implementation must be adjusted to

the specific situations and institutional conditions in the respective Member States, regions and sectors.

In all Member States, the results of the comparability study and the discussions in connection with the transparency of qualifications have increased awareness of existing deficiencies in the current provision of initial training and in particular continuing training of skilled workers. These shortcomings present a challenge not only to the vocational training systems but also to the education and continuing training systems including higher education establishments and universities, all of which are closely linked to the vocational training systems. Reform of these is on the agenda of all Member States as it was in the 1960s. We should avoid repeating the mistake that was frequently made at that time - treating vocational training and continuing training issues as marginal.

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– Situations and trends: Supply and demand for skilled workers –
Burkart Sellin
Project coordinator CEDEFOP

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This document supplements CEDEFOP publications brought out in implementing Council Decision 85/368 (EEC). In particular it supplements the list of occupational profiles at skilled worker level, the Compendium, which is available on diskette and will appear shortly in the form of a 9-language terminology database.

A criticism frequently waged at the findings of the comparability procedure is that it is a static description of the present state which largely ignores new trends and developments. This document attempts to close this gap

- on the basis of an evaluation of the discussions in the various expert groups in CEDEFOP;
- on the basis of preparatory and parallel surveys conducted by CEDEFOP and the Commission on challenges and trends in the supply of and demand for skilled workers;
- on the basis of the evaluation of the author who from the outset coordinated closely this work in CEDEFOP with the competent Commission services and the liaison officers in the Member States.

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Supplement